

Sophisticated applications and additional refinements of some of the concepts are provided in Dr Kapferer's analysis of the course and consequences of a dispute among a small group of African industrial workers in Broken Hill, and in Mr Harris-Jones's paper on the political meaning and significance of the ties arising from common rural origin amongst Africans living in the town of Luanshya.

It is noticeable, though, that in spite of the often close collaboration between the contributors, they do not always use the same words in the same senses. Such discrepancies make me doubt the practical wisdom, whatever the theoretical attraction, of bringing so many new terms into a situation where already, as Barnes writes, "each analyst reads a different interpretation into the writings of his predecessors and introduces new refinements to suit his own particular problem". I would complain, too, about some of the many proffered diagrammatic aids to the understanding of often complex arguments. Apart from minor, but irritating, faults in proof-reading such as the omission of one arrow and the reversal of another in Figure 1 (a), there are several tables and figures which are not self-explanatory and which it is the author's, not the reader's, job to elucidate.

Some of the conclusions to which these lengthy and elaborate arguments lead seemed suspect to me. How, for example, can Barnes possibly maintain that "under tribal conditions the denseness of the network leaves no room, as it were, for the addition of those idiosyncratic relationships of friendship with strangers, or even of patron and client, that helps to fill in the relatively sparse urban network"?

The statement is contrary to fact, and rests on a dichotomy that seems increasingly untenable. I might, also, be more willing to accept Mrs Wheeldon's contention that "the many disagreements which are characteristic of Coloured social organization are not an indication of social disintegration; they are rather an aspect of the integration of a society of this kind", if there were not increasingly ample evidence that such disagreements in many African societies of an apparently similar kind can and do lead to schism and even violence on a scale which might legitimately be called "disintegration".

Still, the book is clearly, in many ways, one of the most remarkable anthropological contributions to urban studies that has ever appeared in Britain. It is likely to have a revolutionary effect both on those who wish for new ways of organizing their research, and on those who are eager to carry anthropology far beyond any traditional conceptions of its scope and methods. It has, too, a good deal to offer to those who are merely interested in Central African societies.

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## BACK TO DARWIN

### Genetic Load

Its Biological and Conceptual Aspects. By Bruce Wallace. (Concepts of Modern Biology Series.) Pp. xi+116. (Prentice-Hall: Englewood Cliffs NJ and Hemel Hempstead, February 1970.) 60s.

THERE is a strange notion, derived from mathematical theories of evolution, that populations of organisms are threatened by a "genetic load", sometimes called the "cost of evolution". This idea looks fair to be for twentieth century evolution what phlogiston was for chemistry in another day; Professor Wallace's strength is that he plainly believes in oxygen.

Darwin said that the overproduction of organisms caused much dying, and that evolution occurs because early death is more likely for some than others (that is, natural selection). The theory of the genetic load goes into reverse gear and asks "As natural selection requires so much dying (a genetic load), how is it that organisms can evolve, or for that matter maintain their genetic

variability, without becoming extinct?" Wallace has a simple answer.

"Discussions of genetic load have too often failed to recognize the ecological aspects of population dynamics." Within wide limits a population absorbs new causes of death by a slight reduction in size; as the genetic load increases or decreases, it "is either drawn from or returned to the general ecological load of which it is a part", for most of the offspring produced must die in any event. If half the offspring die from genetic causes, that does not result in a population of only half normal size. But "the genetic load must not exceed the reproductive ability of [the] species". To account for the variability of natural populations, we must allow first that much of natural selection is "soft" or density-dependent, occurring only at high densities (a return to the original Darwinian idea); second, that the optimal genotype, with whose fitness that of the population is compared, is vanishingly rare in natural populations, so that the usual load theorem is unrealistic.

For the human population the story is different (Muller's idea that Man's genetic load might threaten the growth of his population would be funny if the position wasn't so tragic): as the genetic load means human misery, there is no excuse for throwing radioactivity around.

This argument, presented with great clarity (at the expense, it must be said, of some realism, but then the facts, about *Tribolium* for instance, are just too complicated), makes the third part of the book required reading for all geneticists and ecologists. An important question remains—how do populations avoid accumulating genetic variation that is maintained by "hard", that is, density-independent, selection? Perhaps many don't; after all, there are more species extinct than extant.

The first two sections review the evidence for the genetic diversity of natural populations of fruitflies and men, and discuss some of the better known mathematics about the genetic load. Written with that transparent simplicity which is the mark of the assured master, they make an excellent introduction to these aspects of population genetics; any undergraduate who finds this mathematical treatment too much should not be reading biology.

The book is well produced, mercifully free of acres of Zipatone, and expensive.

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## ACCENT ON MAN

### Évolution des Vertébrés

De Leur Origine à l'Homme. By Georges Vandebroek. Pp. xx+583. (Masson: Paris, 1969.) 120 francs.

As its title states, the aim of this book is to describe those parts of the pattern of animal evolution which are concerned with the line which leads from the higher metazoans to man. The existence of other lines and patterns of evolution is noted in the appropriate places, so putting the line to man in its context, but they are not dealt with in comparable detail. Professor Vandebroek, of the University of Louvain, concentrates on the points at which the line to man diverged from these other lines, because it was at these points that the various characteristics of man (vertebrate, tetrapod, amniote and so forth) were established. These matters are dealt with in a series of six chapters on the origins of the higher Metazoa, of the chordates, of the tetrapods (with special emphasis on the structure of the skull), of the mammals and of the eutherians (especially the primates). In each case, the evolutionary history of the parent group is described first, to form a basis for a more detailed discussion of the origin of the next, higher, group. The last three chapters are concerned with the mechanism of evolution and the concepts of species and of race, with the details of the origin of man himself, and with the present-day races and anthropological types.